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THE CORNELL COUNTRYMAN



COMPOSITION, FOOD VALUE AND METHODS
OF PAYING FOR MILK
By H. C. TROY

HOW TYPES OF FARMING IN NEW YORK
ARE DETERMINED By K. C. LIVERMORE

VEGETABLES FOR THE TABLE DURING SPRING

By F. E. VINTON

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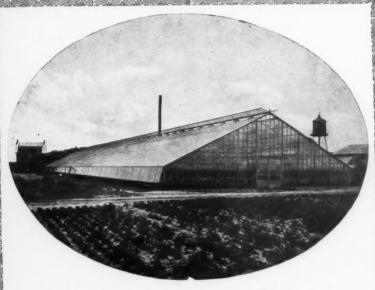
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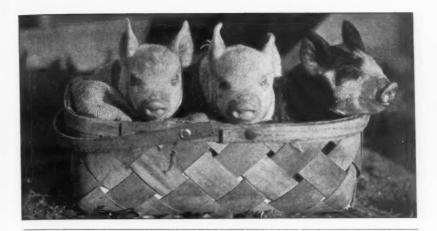


TABLE OF CONTENTS

MAY 1916

Cover-After the Storm-fre	om a pa	ainting	by In	ness				
Composition, Food Value an	d Meth	ods o	f Payi	ing fo	r Milk			
H. C. Troy	-	-	-	-	-	-	-	655
How Types of Farming in	New	York	Are	Det	ermined			
K. C. Livermore -	-	-	-	-	-		-	661
Water Supply Systems for th	e Farm	Hom	e. <i>H</i>	. W.	Riley	-	-	665
Hardy Garden Phlox. C.	L. T	hayer	-	**	-	-	-	669
Cover Crops for the Peach C	Orchard	. C.	<i>H</i> . 1	Wells	-	-	-	672
Book Reviews	~	-	-	-	-	-	-	673
Vegetables for the Table Dur	ring Spr	ing.	France	s E.	Vinton	-	-	674
Odds and Ends From Ever	ywhere	~	~	-	-		~	676
Editorials	-	-	-	-		-	-	678
Campus Notes	-	-	~	-	~	-	-	682
Former Student Notes -	-	-	-	-	-	-	-	687



Sweet is the scent of the orchard in May. When the apple trees array themselves in pink and white it is time for a great annual festival. The apple tree is host. In every one of its florets a place is spread for a little winged guest. The food is nectar and pollen, provided in lavish abundance. A brilliant company of bees and flies and butterflies are guests. The merry activity runs for days together, heightening when the sun shines. It is held at the opening of the summer season, and the serious work of producing an apple crop is dependant on the good will and patronage of these visiting insects.

-James G. Needham in The Natural History of the Farm

THE CORNELL COUNTRYMAN

Vol. XIII

ITHACA, N. Y., MAY, 1916

No. 8

Composition, Food Value and Methods of Paying for Milk

BY H. C. TROY, '96

Professor in Dairy Industry, New York State College of Agriculture at Cornell University

THIS article considers first, the variations in the composition of pure milk; secondly, a comparison of the food values of milk varying in composition; and, thirdly, different methods of paying for milk illustrated by the use of tables.

Until a few years ago, practically all milk was bought and sold by volume or weight regardless of composition. In fact, the composition of milk was not known until about half a century ago when chemical methods for the analysis of milk were perfected.

tests for determining the per cent of fat in milk were developed. In this country the Babcock Test has practically displaced all others.

It was then found that the per cent of fat varies oftener and more widely than do the other milk constituents. The principle factors affecting the compositon of milk are: breed, individual, period of lactation, time between milkings, condition of the animal and nights' or mornings' milk.

The figures in Table I represent three grades of milk the compositon of which would be classed as low, aver-

TABLE I
The Compositon of Milk

			Casein p. c.				Total Solids p. c.
Low	88.80	3.0	2.10	4.60	.70	.70	11.10
Average		3.8	2.50	4.80	.71	.72	12.63
High	85.05	5.5	3.00	5.00	.72	.73	14.95

About that time the practice of pooling milk to be manufactured into butter and cheese commenced. It was noticed that larger amounts of either butter or cheese could be secured from the milk produced by some herds than could from an equal volume of milk produced by some other herds. Then the demand for a practical method to determine the composition of milk became necessary. Several

age, and high. They do not represent the widest range in composition that might sometimes be found in the milk from thirty or forty different herds, although a greater variation than here represented is not often found. The figures for the compositions represent the average per cent of the different solids not fat in the three grades of milk which contain 3 per cent, 3.8 per cent and 5.5 per cent of fat, respective.

tively. It may be noticed that the percentage of each of the solids not fat increases as the per cent of fat increases, but the fat increases in greater proportion.

Food Value

It is profitable to compare the relative food values of average milk and some other foods. In order that this may be done conveniently, investigators have classified the different energy producing substances used as foods as fats, carbohydrates and protein.

The fats and oils are substances with which we all are familiar, and need no description. They are charcomposition of the food. Secondly, we must have a common standard or unit of measurement.

The chemist determines the composition by analysis. It has been found by careful experiments that, if we subject digestible substances to complete combustion, comparing the amounts of heat produced from each, we can secure a fair idea of the food value of each, since the different forms of energy are to a considerable extent comparable.

The amount of heat required to raise the temperature of one kilo (about a quart) of water one degree Centigrade or one and four-fifths degrees Fahren-

TABLE II

Cost and Food Value of Various Foods

	Cents per pound	Heat Units per pound	Cost per 1000 Units in cents
Tenderloin steak	28	1300	21.5
Corned beef	15	1395	10.7
Fresh lean veal	25	730	34.2
Roast leg lamb	22	900	24.4
Smoked ham (52.3 per cent fat)	22	2485	8.1
Chicken (fricasseed)		855	25.7
Halibut steak		565	35.2
Blue fish	18	670	27.0
Boiled eggs	20	765	26.1
Wheat bread	5	1395	3.7
Oat meal	4.5	1860	2.4
Whole wheat flour		1675	2.6
Protein Carbo- Fat			
Milk	3.5	325	10.7
Cheese 25.0 33.7	20.0	1950	10.2
Butter Boiled potatoes @ 75c bu. Dried beans @ \$3.00 bu.	35 1.25 5.50	3605 440 1605	9.7 2.8 3.4

acterized chemically by having a high carbon content which unites with oxygen to form heat and energy. They do not assist directly in building up muscle tissue. The carbohydrates are made up of sugars, starches, gums and similar substances. They also produce heat and energy for the body, act more quickly than the fats, and are more easily utilized. The proteins are found in substances like lean meat, casein and albumen of milk, white of egg, and in the juices and seeds of many plants. They produce heat and energy and build up muscles.

In order to compare the value of different foods in satisfying body requirements, we should first know the heit is called a calorie. It is taken as the unit of heat measurement. It has been found that a pound of fat undergoing complete combustion produces 4220 calories, and that a pound of either protein or carbohydrates produces 1860 available calories. These figures are considered a fair measure of the food value of a pound of the substances.

The figures in the first column represent the retail price in cents per pound of each substance. The second column gives the heat units from a pound of each and the third column gives the cost in cents of 1000 heat units for each food.

It is interesting to note that the

energy producing power, which is measured in terms of heat units, has little effect upon the cost, since 1000 heat units derived from halibut steak costs 35.2 cents, whereas the same amount of energy secured from oat meal costs only 2.6 cents.

It also appears that milk at seven cents a quart, cheese at twenty cents a for the fat is relatively too low when compared with five cents per pound allowed for the sugar and protein. Some hold that the marketable value of milk fat is worth about ten times as much as the marketable value of the sugar and protein, but the figures here used serve to show the differences in food value that exist betwen rich and poor milk.

Value of Milk by Different Methods

TABLE III

			100 lbs. o	f Milk			
Fat			Sugar and	l Protein	Total		
	Heat	Value		Heat	Value	Heat	Value
Per cent 3.00	Units 12660	30c lb.	Per cent 7.70	Units 14322	5c lb. 0.385	Units 26982	\$1.28
3.50	14770	1.050	7.95	14787	0.397	29557	1.45
4.00	$16880 \\ 18990$	$\frac{1.200}{1.350}$	8.20 8.45	15252 15717	$0.410 \\ 0.422$	32132 34707	1.61
5.00	21100	1.500	8.70	16182	0.435	37282	1.94
5.50	23210 25320	$\frac{1.650}{1.800}$	8.95 9.15	16647 17112	0.447 0.460	39857 42432	2.10

pound, and butter at thirty-five cents a pound, each supply 1000 heat units at nearly equal cost. Corned beef and smoked ham are the only meat foods that furnish heat units as economically as those secured from dairy products. It would be difficult to devise a more economical diet than the farmer's, when it consists, as it usually does, of potatoes, salt meat, cereals and dairy products, all secured at first cost.

The first column of this table gives the percentages of fat in several samples of milk, differing normally in composition. The second column gives the heat units that may be produced from the fat in 100 pounds of the milk of each grade and the third column gives the money value of the fat at thirty cents per pound.

The fourth column gives the percentage of sugar and protein that would normally exist in milk of the different grades while the fifth column gives the heat units and the sixth column gives the value in cents of the sugar and protein calculated at five cents a pound. The seventh column gives the total heat units and the eighth column gives the total money value of 100 pounds of each sample.

It is probable that 30 cents per pound

Thus, the milk containing 3 per cent of fat would have a value of \$1.28 per hundred pounds, while the milk containing 5 per cent of fat would be worth \$1.94 for each 100 pounds or a difference of 66 cents.

TABLE IV

Value at Thirty Cents per Pound for Fat and Thirty Cents Per 100 Pounds for Skim Milk

Fat Per cent	Fat Value	Skim Milk Value	Total	
3.0 x 30 3.5 x 30 4.0 x 30 4.5 x 30	$=\begin{array}{c} 1.05 \\ 1.20 \end{array}$	plus .30 =	\$1.20 1.35 1.50 1.65	

In this table the fat in the milk is given a value of thirty cents per pound as in Table III, but a flat rate of thirty cents is allowed for the skimmed milk from 100 pounds of the whole milk. This method of paying for milk has, to some extent, come into use recently. It does not take into consideration the differences in food value existing in different samples of skimmed milk; therefore, it works slightly to the disadvantage of the producer of rich milk. Figured on this basis, 100 pounds of the three per cent milk is worth \$1.20, while

100 pounds of five per cent milk is worth \$1.80, or a difference of sixty cents.

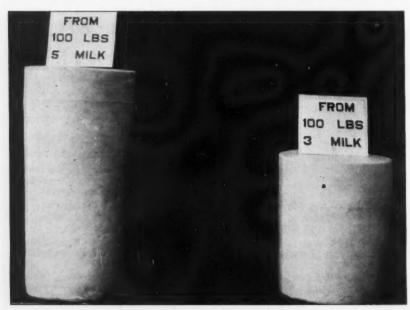
Table V compares two methods of arriving at the value of milk of different quality when the milk has been The fourth column gives the value of the milk calculated on the fat test basis. The total fat in the different lots of milk is thirty-six pounds and the total cheese made at fifteen cents per pound

TABLE V
Cheese Yield and Value of Milk by Two Different Methods

Fat Per cent	Lbs. of Cheese	Value at 15c per lb.	Value on fat test basis	Cents Difference
3.00	8.30	\$1.245	\$1.197	5.2 2.0
3.50	9.45 10.60	1.412 1.590	$\frac{1.392}{1.590}$	0.0
4.50	11.74	1.761	1.789	plus 2.8
5.00	12.90	1.935	1.988	-plus 5.3

made into cheese. The yield of cheese given in the second column was taken from "The Science and Practice of Cheese Making," by Van Slyke and Publow. One hundred pounds of milk containing five per cent of fat produced 4.6 more pounds of cheese than 100 pounds of milk containing 3 per cent of fat. At fifteen cents per pound for the cheese 100 pounds of the richer milk would be worth sixty-nine cents more than 100 pounds of the poorer.

is worth \$14.32. Then, if the value of the milk is calculated on the fat basis, each pound of fat would be credited with 39.77 cents. One hundred pounds of the milk containing three per cent of fat would then bring \$1.19 as compared with \$1.98 for 100 pounds of the five per cent milk. The fifth column shows the loss or gain in cents when the payment is based on the fat test compared with the values in column three.



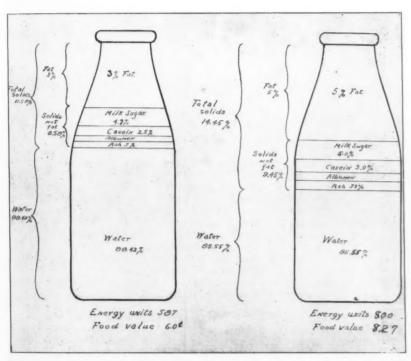
Contrasting Amount of Cheese Made from 100 Pounds of 5 Per Cent and from 100 Pounds of 3 Per Cent Milk

TABLE VI

Heat Units from One Pound of Cheese from Milk of Different Composition

Per cent Fat	100 lbs. Milk		of Cheese		per Pound	Heat Units	Value per Pound
3.0 3.5 4.0 4.5 5.0	15523 17853 20175 22807 24921	8.3 x 12.9 x	8.30 9.45 10.60 11.74 12.90 15 15.505	1.245 2.00	1870 1890 1903 1918 1932	00 20 33 48 63	15.00 15.16 15.21 15.38 15.505

The fifth column in Table VI gives the difference in value measured in heat units between a pound of cheese made value to be worth 15.5 cents. The cheese from the richer milk would also have an additional value because of its



Contrasting Total Composition and Food Value of 5 Per Cent and 3 Per Cent Milk

from five different grades of milk. The sixth column shows that when a pound of cheese made from milk containing three per cent of fat, is worth fifteen cents, a pound of cheese made from five per cent milk will furnish enough food

greater palatability, finer flavor, and aroma, and better texture.

In Table VII we have brought together for comparison the prices that would be realized for milk of different grades, if sold according to the methods discussed. It has been shown that a wide range of values may exist in pure milk from different sources. These differences in value should be recognized and a more equitable method of paying for milk should be adopted than is in operation where a set price is paid per 100 pounds of milk, regardless of composition.

It appears that the method of paying on the fat test basis for milk that is made into cheese is probably the fairest method practiced when we understand that a greater amount of cheese is made from the richer milk, that such cheese has higher quality and, that pound for pound, it has greater actual food value.

TABLE VII
Values by Different Methods Compared

Per cent Fat	S. N. F. at 5c per lb.	at 15c per lb.	Test Basis	Skim Milk at 30c per 100 lbs.	from Cheese at 8c per 1000
3.0	\$1.28	\$1.245	\$1.193	\$1.20	\$1.24
3.5	1.45	1.412	1.392	1.32	1.42
4.0	1.61	1.590	1.591	1.50	1.61
4.5	1.77	1.761	1.789	1.65	1.82
5.0	1.94	1.935	1.988	1.80	2.00

The Road to Anywhere

Ho! roll your pans in your ponchos and swing them upon your backs;
For Anywhere is a day ahead, and we must be making tracks.
Whither or whither we do not know, and whither we do not care;
Wanderers we with footsteps free to take up Anywhere!

We toss our coins at the crossroads and follow the way they fall,
Or turn our back to its chosen track; it matters not at all
Whether our road run high or low, shaded it be or bare,
Since those we be whose footsteps free fall blithe toward Anywhere.

Our feet are free and our hearts are free, and we talk to the folk we meet.

Wonderful human adventures fall at our questing feet.

Thought for thought to the men we meet, and a word to the maiden fair: These mark the way and make a day on the Road to Anywhere.

So now we swing at a four-mile clip through the breezy, sunny day;
And now we sprawl by a mountain stream to hear what the waters say.
Then again along to a marching song or a slower stroller's air,
Our footsteps fall to the errant call of the Road to Anywhere!

R. L. '18.

How Types of Farming in New York Are Determined*

BY K. C. LIVERMORE

Professor of Farm Management, New York State College of Agriculture at Cornell University

Alfalfa

The early colonists to North America brought with them alfalfa, or lucerne, as they called it. Throughout the early history of the country repeated attempts were made to grow it in the eastern part of the United States. But nowhere in the east did it become important until the present time, except in Onondaga County. In this county it has been grown continuously since 1812.

Most of the alfalfa in Onondaga County was grown on the drumlin formations in a belt several miles wide extending east and west just south of Syracuse. These steep sided and round topped drumlins consist largely of very gravelly loam and contain much limestone derived by the glaciers from the nearby outcrops of limestone strata. Because of the height and steepness of these drumlins it was impracticable to crop them as the more level lands of that section were cropped. Pasturing was not much more practicable because on such well drained gravelly soil, pasture plants were short lived and produced little or no feed in dry weather. But soil conditions on these drumlins were ideal and climatic conditions in the section were very favorable for alfalfa. The winters were not too severe, the seasons, averaging 160 days between frosts, were sufficiently long and the summer rainfall was ample for three or more cuttings in most years. Little tillage was necessary because the plants were long lived in the congenial soil, and the having operations were not too difficult even on the steep hill sides.

Thus, alfalfa was more practicable on these drumlins than pasture or than any of the other profitable crops of the region, such as potatoes, tobacco, and cabbage. It should be noted, however, that on other more level limestone soils** of the State, almost if not just as favorable for alfalfa, the crop was grown very little. Until after the period of agricultural depression in the nineties this was the status of alfalfa in the State. The acreage was very small. As late as 1899 many counties were without a single acre of alfalfa and only three counties had over 100 acres of it. Then, a great shift in economic conditions drew much attention to the crop and resulted in a tremendous artificial stimulus to its production.

Following the period of depression came a period of general prosperity with high prices for most farm products. Grain prices at first increased more rapidly than the prices of milk and hay and meat. This made profitable stock feeding a problem for study. Eastern dairymen were especially concerned, for they were buying most of their grain feeds. The agricultural colleges and experiment stations, the institute workers, and agricultural journals gave their attention to the problem. The importance of protein, the highest priced essential constituent of feed stuffs, was emphasized and cheaper sources of protein were sought. Thus, alfalfa, which had already proven its value as a cattle feed in the far west, came into prominence in

^{*}This is a continuation of the fifth article in a series dealing with the agriculture of New York.—Ed.

^{**}The phrase, "limestone soils" as used in this article refers to any soil well supplied with lime stone fragments.

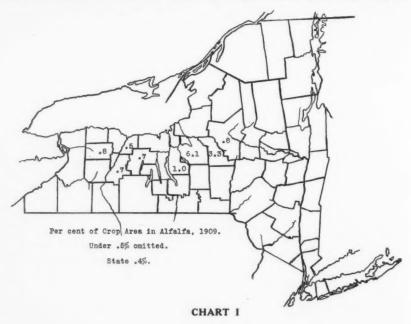
the east. All the agencies of extension began an alfalfa campaign which has not yet ended. The result is that practically every county in the State now has some alfalfa. The acreage in Onondaga County increased from 767 in 1899 to 13486 in 1909, in Cayuga County from 39 to 2371, in Ontario from 42 to 1442 and for the State the increase in that decade was approximately sevenfold, and by now it is probably at least fifteenfold.

Changes in the relative prices of products have made alfalfa growing profitable in places where formerly it was not grown. On the other hand, this great stimulus to its production has undoubtedly led to its introduction in places where it will not add to the profits of farming. Therefore we cannot so readily draw conclusions as to the factors that determine its location from a study of its present distribution as can be done with longer established crops. However, the early history of the crop and the tendencies of its distribution indicate to a certain extent

its probable place in New York systems of farming.

Chart I shows the counties of the State which had .5 per cent or more of the crop area in alfalfa in 1909. Although this is so small a proportion of the crop area, only eight counties were included and their arrangement is striking. The original alfalfa belt in Onondaga County has extended through Madison into southern Oneida, and westward as far as Genesee County, being closely associated in each county with the limestone soils, especially those in drumlin formations. (See Figures 1 and 2, pages 17 and 19, Vol. XII).

Without doubt, a deep well drained soil abundantly supplied with lime, not only in the surface six inches, but to the full depth to which the feeding roots penetrate, is the condition most important in determining where alfalfa shall be prominent in the system of farming. But why has not alfalfa production become as important in other parts of the State where may be



found deep limestone soils well drained naturally or artificially? The Ontario soils, some of the Dunkirk soils, and others apparently and by test, grow alfalfa well. Such soils, both north and south of this alfalfa belt, and in parts of the Mohawk Valley and the northern tier of counties, are well suited to this crop, but it has not become important there. The question is not answered

alfalfa as much as they can handle of the cultivated crops best adapted to their conditions. Thus, north and south of the alfalfa belt in western New York and on the level spaces between the drumlins, the land is given primarily to potatoes, cabbage, beans, canning factory crops, or fruits, and alfalfa occupies a minor place in the system. North of Syracuse the same



A GOOD CROP OF ALFALFA ON WELL DRAINED HILLSIDE

by climatic factors because each of these regions has rainfall and length of season comparable to those of some part of the alfalfa belt. Market conditions are similar. Thus, by elimination, the second important factor must be competition.

In these sections where alfalfa might be grown but has not become important, it is in all probability limited by competition with the cash crops of the region and in many cases with clover hay. Good alfalfa conditions in this State nearly always mean good conditions for one or more of our most profitable crops provided the topography permits easy tillage. The competition is partly for land and partly for labor. While alfalfa profits usually compare very favorably with those of other crops for the labor concerned, they usually do not compare so well on the acre basis. When good alfalfa land is level enough to grow cultivated crops, farmers usually grow in preference to crops with tobacco also, exclude alfalfa on most of the more level land. On the good alfalfa lands of the Mohawk region hops have dominated. If hops continue to fail, probably some of these other crops will replace them, on the more level land and alfalfa on the steeper land.

Alfalfa conflicts more or less with most of these crops in labor requirement. The conflict is greatest, perhaps with the bean and wheat combination. It is bad also with tobacco, hops and potatoes. This explains further why alfalfa gives way to these crops on the more level land.

One other condition tends to limit alfalfa production away from the drumlins on land that is adapted to the crop. In these sections live stock is not important because so little land has to be pastured. This lessens the home requirement for hay and, more important, it increases the dependence upon a good sod for much of the

needed nitrogen and humus. The usual practice in the northern half of western New York is to plow under a clover sod (after cutting one season) for potatoes, beans or cabbage. This practice provides enough hay for the stock and furnishes a better sod more cheaply than could be done by growing alfalfa. In order to have an alfalfa sod every year that crop, if used, could be left down only one year at a

yond the belt indicated in the preceding chart. This has been due in part to the artificial stimulus and in part to the much higher prices of alfalfa hay. If prices go high enough, of course alfalfa can compete as a cash crop with the others even on the more level lands. It is doubtful, however, if this price condition could continue long because protein could be purchased more cheaply in other feeds and alfalfa



GOOD ALFALFA SOIL IN WESTERN NEW YORK
On such level land cabbage, potatoes, beans and other cash crops have paid better
than alfalfa

time in most cases because of limited area. This would mean a higher seed cost than with clover. Further losses would result if an alfalfa sod were used because one seeding of alfalfa is ordinarily good for three to ten or more years and the latter yields usually are better than the first. Alfalfa roots give more trouble than clover roots in plowing for and cultivating the following crop.

The foregoing discussion is not intended to convey the idea that alfalfa has no place whatever in systems of farming on the more level limestone lands. While alfalfa probably will not become as important on such lands as on the drumlins and other hilly limestone lands, small fields will prove profitable on many farms so located and larger areas on a few farms. Since 1900 there has been considerable extension of the alfalfa crop be-

could be shipped in from western points where prices are much lower. These factors are already checking the price advance.

The distribution of the labor requirements of alfalfa is such as to make it fit well into a cropping system which includes considerable oats and ordinary hay. Its feeding value would make it desirable on farms with such a system assuming that they were dairy farms as most of such farms are. But unfortunately either soils deficient in lime or drainage, or too short seasons and severe winters prevent the combination. It is an interesting fact that in this State most of the farms, on which alfalfa would contribute most to the business efficiency, are unable to grow it profitably. The alfalfa campaign has accomplished its original purpose only to a very limited extent. In

(Continued on page 690)

Water Supply Systems for the Farm Home

By HOWARD W. RILEY, '01

Professor of Rural Engineering, New State College of Agriculture at Cornell University

(Continued from page 569 in the April issue of the Countryman)

ECHANICAL water systems is a term under which will be described different arrangements of power-driven pumps, and also different methods of storing the energy delivered by these pumps so that this energy may deliver water when desired after the pumps have stopped. The essential parts of the elementary pump are a cylinder, the entrance to which is through an inwardly opening valve, and in addition, a water-tight free moving plunger carrying an upwardly opening valve. If the cylinder be immersed in water whenever the piston is drawn up in the cylinder, water will rush in to fill the cylinder by gravity. If the

cylinder be located above the water we depend on the pressure of the atmosphere to push up in the suction pipe of the pump a column of water to fill the vacuum left by the plunger of the pump when it is raised. From figures previously given, atmospheric pressure should maintain a column of water thirty-four feet high, but because of mechanical imperfections of pumps twenty feet had best be considered the greatest practical lift. When we consider that this forcing power of the atmosphere can be used to deliver water directly up through 20 feet of pipe or directly up through 15 feet of lift, and then laterally through a length of pipe

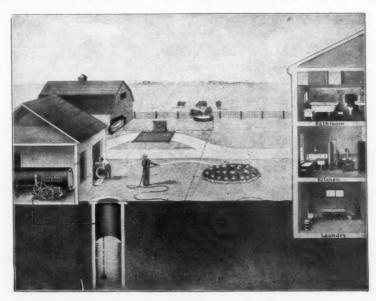
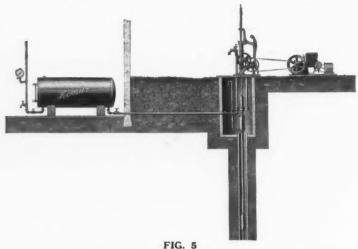


FIG. 4
SHALLOW WELL PUMP INSTALLATION
Pump geared to engine and supplying hydro-pneumatic pressure system

in which the friction head is 5 feet more, we then have the basis for the next classification.

Shallow well pumping systems are

may be transmitted from the engine to the well by mechanical transmitting systems of various kinds. For instance, one alumnus of our college has oper-



DEEP WELL PUMP INSTALLATION

Engine belted to pump jack. Air supply pump cylinder just below pipe to pressure tank

those in which the pump is at such a level that the total suction head made up of friction head and lift above the surface of the water does not exceed 20 feet. In this type of system, therefore, the pump may, if desired, be located at some point other than directly over the well as illustrated in Figure 4, care being taken to insure that the suction pipe is absolutely air tight, large enough to produce little friction loss, and, if the pipe is long, provided with a suction chamber in the line as near the pump as possible in order to render as uniform as possible the flow in the pipe under the intermittent sucking action of the pump.

Deep well pumping systems are those in which the water level is so low in the well that the cylinder must be placed in it in order to get near enough to the water. In these systems the engine may be near the well, as in Figure 5, or it may be remote from it and the power ated such a pump from an engine some distance away by means of a rod working back and forth in a pipe laid under the lawn. The power is directed downward at the well by a bell crank below the cover, and nothing of the system is visible above ground.

Artificial gravity pressure systems are similar to the natural gravity systems described above, except that some prime mover as a windmill or gasoline engine must be used to force the water, either by a deep well pump or a shallow well pump as circumstances dictate, up into The windmill the storage reservoir. tower in Figure 6 might easily be made to support a storage tank for such a system instead of the hydro-pneumatic system shown. Concrete storage tanks built in the ground below frost on hills make excellent gravity reservoirs. The pipe leading from the pump to the tank can generally be used also as the supply pipe from the tank and so save expense.

Hydro-pneumatic pressure systems are those in which the motive power for forcing the water up above the tank to the desired height is secured by compressing air in a metal tank and then forcing in water which still further compresses the air. About one-third of the tank is filled with air so that the effective delivery capacity in water is about two-thirds the tank capacity. Air under pressure over water is absorbed by the water so that suitable means must be provided with these systems for replenishing the air supply. An extra cylinder for this purpose is shown just above the well casing in Figure 5. The hydro-pneumatic system is reasonably cheap, it is easily installed, the tank is safe from frosts, and leaks in the reservoir do not injure the plaster and paper in the house as would happen with a leaky attic gravity tank. These systems are subject to the limitations of the water pumps by which they are supplied, and in addition, water stored in them may become stale after a time. It is stated that when rain water is stored in a metal tank it becomes rusty because its action on the metal of the tank is more vigorous than that of well water, a contention which may be borne out by the fact that pure rain water introduced into a steam boiler has a very decided corroding effect on the boiler plates. When hydro-pneumatic systems are installed to deliver two kinds of water, one pump will suffice, but two tanks are necessary.

Pneumatic pressure systems are illustrated in Figure 7, and offer a means of obviating the objections just cited against the hydro-pneumatic systems. The pneumatic system delivers water fresh from the well, and in addition is admirably adapted for use in situations where the supply is so distant from the power plant and so much below it as to preclude the use of a shallow well pump installation. The distinctive feature of the system is the pneumatic pump which is submerged at least zix feet in

the water supply reservoir. This pump is operated by compressed air delivered to it from the power plant through a small metal pipe which must be laid with the greatest care to avoid leaks. Through valves which are automatically operated at the reservoir by suitable arrangements within the pump, the compressed air is caused to displace from the one or two chambers of the pump water which has previously rush into the chambers by gravity. These displacement chambers in the pump are so small that the water in them is being constantly discharged and therefore always fresh. Their delivery capacity varies from two to fifty gallons per minute and a maximum lift of 200 feet may be obtained. Their practical range should be considered as from five to fifty gallons capacity with a maximum lift of 125 feet, as less than five gallons per minute is too slow. Delivery by

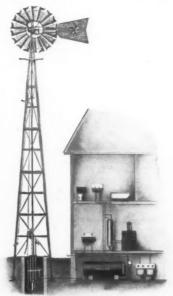


FIG. 6
HYDRO-PNEUMATIC PRESSURE
SYSTEM
Automatic pressure regulation of wind-

Automatic pressure regulation of wind

this system to great heights is not efficient and involves the use of a type of air compressor that is rather expensive.

There are five makes of this type of system known to the writer, in three of which the pump has two displacement chambers controlled by automatic valves located on the pump and under water; in one of the other systems having but one displacement chamber in the pump, the valves are located above the surface to make them accessible. In systems of this type the engine runs an air compressor charging to a pressure of about 100 pounds per square inch an air storage tank at the power house. From this tank the air goes to the one or more automatic pumps, passing first, however, through a regulating valve which reduces the high storage pressure to an amount suitable for giving the desired discharge at the water faucets.

In addition to the advantages already mentioned, this type of system is well adapted to cases where rain water and well water are both to be pumped, a condition which, as we have seen, involves in other pressure systems the use of two tanks. In this system the only additional equipment necessary is a second automatic pump and the necessary pipe for making connections. Objections to the pneumatic system usually include first cost and the liability of trouble in the automatic valves, but these troubles by refinement of mechanism or radical change of design are gradually being eliminated to a large extent, and this type of system is becoming rapidly more reliable and consequently more popular than it has been in the past.

Conclusion

It has been the aim in these two articles to cover briefly the entire field of water supply systems, and reference has been made to the most simple and to the most elaborate. It is hoped that readers who do not have running water available in the kitchen and barns may by these descriptions be aided in the selection of a water supply system well (Continued on page 696)

WELL COMES

PNEUMATIC PRESSURE SYSTEM FOR TWO KINDS OF WATER

Automatic regulation of pump pressure to suit demands and automatic control
of engine

FIG. 7

Hardy Garden Phlox

BY C. L. THAYER

Instructor in Floriculture, New York State College of Agriculture at Cornell University

Unlike many of our garden flowers phlox may indeed be called an American plant, since all of its more than forty species are found growing wild in some section of North America. On the other hand, as in the case of many of our garden flowers, it has apparently been necessary for foreign hybridizers to improve on the wild types and develop the many beautiful forms of the American phlox before we could appreciate its value.

Because it is one of our native American plants and includes forms that are adapted for many purposes in the garden, should we not take a peculiar interest in phlox? And should we not take a still greater interest in it because it is of such easy culture, and because, by a careful selection of species and varieties, it will give a continuation of flowers from April until the blooms of the late-flowering varieties are destroyed by fall frosts?

Perhaps you have heard some one say that he can think of phlox as a weed only, having no place in the garden. We wonder whether such a person has seen some of the beautiful light-colored varieties that are so attractive. Possibly he is judging all phlox by an ugly magenta or a dingy lilac variety that he has seen. Surely he would not classify as weeds such exquisite varieties as Elizabeth Campbell and Aglae Adanson, or the trailing forms of Phlox subulata, which are beautiful carpets of bloom in early spring.

Before going further it might be well to describe what is meant by hardy phlox. Strictly speaking, the term includes all the forms of phlox that live over in the ground from year to year, that survive the winter—in other words, the perennial forms as distinguished from the annual form, Phlox drum-

mondii, which must be raised from seed every year. The term hardy garden phlox, as commonly used, includes the early—and the late-flowering summer phlox. The former group begins to bloom in late May and early June and continue blooming throughout the summer. The latter, which is by far the larger group, begins to bloom in late June and early July and continue until killed by frost. It is with these two groups that we are especially concerned, since we are not attempting to include all the hardy forms of phlox.

It would hardly be fair, however, to pass unnoticed the low, trailing, springflowering species, which are so well adapted for planting as ground covers, in rock gardens, and on poor gravelly soil. These species seem to delight in the last-named situation as may be judged from the illustrations. Undoubtedly the most important of these forms is Phlox subulata, the moss pink of our grandmothers' gardens and a species found growing wild in certain sections of New York State. It is the earliest species to flower, beginning in April, and when in full bloom the plant is like a carpet of dark green, set with little flowers each about an inch in diameter. of a purplish rose color, with a darker eye at the center. There are several good varieties of this species: var. alba is white, with a slight reddish violet eye; var. nelsoni is better as far as color is concerned, as it is pure white, but it is not quite so vigorous in growth; for those who preper lilac shades, the variety lilacina is one of the best; vivid is a beautiful salmon-pink variety.

Closely following *Phlox subulata*, in fact blooming at practically the same time, comes *Phlox amoena*, the "lovely phlox." This has the same habit of growth as *Phlox subulata*, but the leaves

are larger and less numerous, and the flowers are larger and are purplish rose in color.

These two species require very little care; they will almost care for themselves. The trailing stems or branches take root readily and in a few years The late summer-flowering group, which includes the varieties most commonly grown, is without doubt the most important of all. Not only is there a great range of color in the group—white, pink, salmon pink, scarlet, red, and purple, and almost every imaginable com-



A BED OF LOW-FLOWERING PHLOX

one plant will cover considerable space. Since they are evergreen species and the flower buds are formed in the fall, they are benefited by being covered with light, strawy mulch from cold as to shield them from the bright sunlight until it is time for the flower buds to develop.

Of the summer-flowering group the early-flowering varieties are those belonging to the type, Phlox glaberrima var. suffruticosa. This name is not quite so formidable as it looks: it means that the plant is very smooth and has a stem which is suffruticose, or woody, at its base. The varieties of this type are seldom, if ever, over three feet in height. They have a smooth stem and thick, smooth, dark shiny green leaves. As already stated, they begin to flower in late May and early June and produce flowers intermittently until killed by frost. If the main truss, or flower cluster, is removed when it has finished blooming, many side branches will be produced; while these will not produce trusses as large as the main one, nevertheless they will give a satisfactory amount of bloom.

bination of these-but there is also a great range in height, from the little dwarf Hermine, about ten inches high, to the giant Charlotte Saison, which grows to a height of five feet or more. The varieties in this group are generally classed as varieties of Phlox paniculata (the panicled phlox), although probably some of them are hybrids between this species and Phlox maculata (sometimes called wild sweet William). Frequently they are listed as varieties of Phlox decussata, a synonym of Phlox paniculata. The blooming period of this type extends from the latter part of June or early July until late in the fall, when the flowers are injured by severe frosts. Some varieties do not begin to flower until the end of July or about the middle of August, and so with a careful selection of varieties one can get a fine succession of bloom throughout the sum-

With the number of varieties of this type that are listed in American catalogs—over five hundred at the present time—it would seem that even the most particular person might be satisfied.

The summer-flowering phloxes are at their best when grown in a rich and rather moist soil, although they will do fairly well in poorer soils. They are rank feeders, and therefore a liberal dressing of stable manure should be spaded in before planting. Planting may be done either in the spring or in the fall. If done in the spring, it is advisable to do it as soon as the ground can be worked easily, before the plants have made much growth. If fall planting is preferred, it should be done early enough so that the plants may become established before the ground freezes. Plants set out as last as October 25 have given excellent results the following season, but it is hardly advisable to plant much later than this. For immediate effect the plants may be set eighteen inches apart, but if they are to remain in the same location for several years they should be set thirty inches apart each way. Better flowers are obtained if the clumps are lifted and divided every third or fourth year; from three to five stems should be left on each piece and these should be planted at the distances mentioned above.

If it is desired to delay the blooming season, the tip of each stem may be pinched out about the first of June; this will cause the plant to send out many side branches, which will naturally flower much later. However, the trusses borne on these branches will not be so large as the main truss would have been had it been allowed to develop. If the main truss is removed as soon as its flowers have faded (on plants that have not previously been pinched), branches will be produced that will give a second crop of bloom.

Late in the fall, after the ground has frozen, the plants should be covered with a mulch. Strawy manure is the best material. This prevents injury to the buds and roots by alternate freezing and thawing. The mulch should be removed in early spring before the plants start into growth.

Mildew is the commonest disease of

phlox, and is much worse in wet than in dry summers. Its presence is indicated by a white, powdery or downy substance on the leaves. Bordeaux mixture is frequently recommended as a preventive. but it has the disadvantages of discoloring the foliage. An ammoniacal solution of copper carbonate can be substituted. which is equally effectual while it remains on the plant but as it is easily washed off by rain the spray must be occasionally repeated. It is made by mixing three ounces of copper carbonate with three quarts of ammonia (or of sufficient quantity to disolve the copper, the quantity depending on its strength), the mixture when used being diluted to make twenty-five gallons of liquid. This is better used as a preventive than as a cure, and should be applied before the mildew appears.

In some localities white grubs, the larvae of May beetles, or June bugs, often prove injurious to the roots of phlox. The easiest method of controlling these is to fork the ground over carefully before planting, and destroy all the grubs that are found.



HIGH-FLOWERING PHLOX OF A HARDY SUPERIOR TYPE

Cover Crops for the Peach Orchard

BY C. H. WELLS, '16

With the rapid advance in commercial fruit growing and the ever-present competiton both in methods of management and in the marketing of the fruit, the progressive fruit grower of to-day is rapidly resorting to cheaper methods of keeping up the fertility of his soil. Stable manure is now widely used by many fruit growers as the only means of maintaining soil fertility. This is, of course, a good method and can be profitably practiced on small farms. On the larger farms, however, manure and the commercial fertilizers become a big item of expense which cuts into the season's profits.

The supply of plant food for the commercial peach orchard is one of the greatest problems of the peach grower. A thrifty peach orchard makes a heavy drain on the soil fertility, not only because of the large crops produced, but also because of the great amount of new wood growth that is made each year. Each year the peach tree is probably pruned the most severely of all the eastern-grown fruit trees. This severe pruning stimulates the tree, with a large amount of new wood growth as the result. The following summer this new growth which varies from several inches to six feet in length, bears fruit. If the tree makes the desired amount of new wood growth and produces a good crop of wellmatured and well-colored fruit, it is necessary that a considerable amount of plant food be returned to the soil. This is accomplished by the use of cover crops, which are in many cases the cheapest of all fertilizers and which have many advantages that manure and commercial fertilizers do not possess.

A cover crop may be defined as any annual crop sown between the trees to build up the soil fertility. It is used for the particular purpose of securing the mulching and physical effect on the land in the intervals between regular

fruit crops. The cover crop is sown in midsummer, usually about the last of July or the first of August, after the last cultivation and preferably just before a rain. The crop is not plowed under until the following spring. Crops like buckwheat, which make a tall growth before apple-picking time, should be laid flat by dragging with a couple of planks cleated together and loaded with stone. This will facilitate picking and will keep the windfalls clean.

The kinds of cover crops

There is no one best cover crop for all purposes and all conditions. The grower must study the conditions of his trees and his land, and then decide for himself as to the kind of crop to use; for the choice of the proper cover crop is largely a local problem, just as the method of tillage or the kind of fertilizer is a local problem.

All cover crops may be placed in either of two groups: those that have the power of appropriating and utilizing free nitrogen through the action of the root nodules, termed legumes; and those belonging to the non-leguminous group, which do not posses nitrogenfixing root nodules. If the peach trees are making a vigorous growth it may be well to use the non-leguminous plants, as the increased amount of nitrogen which the legumes add to the soil may over-stimulate the growth of the trees.

The more important cover crops may be listed as follows:

e listed as follows:		
Leguminous	Non-leguminous	
Alfalfa	Barley	
Beans	Buckwheat	
Clovers	Oats	
Vetches	Rape	
Peas	Rve	

These may be sown alone or in combination. The combinations are prefer-

(Continued on page 700)

Book Reviews

The Standard Cyclopedia of Horticulture

(By Liberty Hyde Bailey, former dean of the New York State College of Agriculture. Published by the Macmillan Company, New York. Price 6.00.)

This is the fourth of a six volume series on which Dr. Bailey has been working for four ye ars. The volume is illustrated with ninety-six full page colored plates and 645 figures. The cyclopedia is a discussion for amateur, professional and commercial growers, of the kinds, characteristics and methods of cultivation of the species of plants grown in the regions of the United States and Canada for ornament, for fancy, for fruit and for vegetables; with keys to the natural families and genera, descriptions of the horticultural capabilities of the states and provinces and dependent islands, and sketches of eminent horticulturists. This cyclopedia is considered by many as one of the most complete works on horticulture yet published.

(Cornell Bulletin 364, "The Cost of Producing Milk on 147 Farms in The Cost of Producing Delaware County, New York," by Professor A. L. Thompson of the Department of Farm Management. Free upon application by any resident of New York State.)

Among men in the milk business there is a growing unrest and discontent with things as they are, with a surprising lack of definate information as to just how things are. This bulletin, which forwards no further opinions but simply tells the results of two years painstaking effort to discover the cost of milk production in New York, should, therefore, be interesting and timely. "It is a study of the different costs of the dairy business, not an attempt to prove that dairying is either a profitable or unprofitable enterprise."

The field of the survey was 174 farms in Delaware County. The care with which the survey was planned and carried out can only be appreciated by a perusal of the report. Here we may only deal with the outstanding results.

"The net cost of producing 100 pounds of milk during 1912 was \$2.35. or a little over 5 cents a quart. * * The average price received for this milk was \$1.65 a hundredweight"—an average apparent loss of 70 cents per hundredweight or one and one-half cents per quart.

The year 1912 was poor so, "for fear the results obtained might lead to the wrong conclusion," the survey was repeated over the same farms in 1913. a year in which "the chances for making money were above the average. Under these favorable conditions the average cow was kept at a loss of \$12.50." The cost per hundredweight was \$2.03 and the selling price \$1.76an average apparent loss of twentyseen cents per hundredweight, or seven-tenths cents per quart.

The report makes it plain that while only 15 of the 174 dairymen made money in 1912 and only 52 in 1913, it does not necessarily follow that the remaining majority will be forced out of business, as the utilization of home labor, the feeding of farm products and the acceptance of a low rate of interest may yet maintain a cash balance in favor of the herd. It concludes with a discussion of the various factors of milk production and their relation to profit or loss.

(By G. M. Brace, Director of Manual Farm Shop Work Training, Central High School, St. Paul, Minnesota, and D. D. Mayne, Principal of School of Agriculture and Professor of Agricultural Pedagogics, University of Minnesota. Published by the American Book Company, New York. \$1.00 net.)

This book is written primarily for pupils taking agriculture in elementary and secondary schools, and for (Continued on page 710)

HOME ECONOMICS

Vegetables for the Table During Spring

BY FRANCES E. VINTON

Instructor in Home Economics, New York State College of Agriculture at Cornell University

THIS is a season puzzling to house-keepers. Winter roots are withered, cabbages are spoiling, the supply of home-canned products is almost exhausted and summer vegetables are still far away. Our grandmothers balanced the uneven diet with spring bitters and nauseous tonics with fair results. The custom was not popular then, nor is it now. How can the need be met?

Jars of summer vegetables emptied during the winter, may be filled with roots of carrots, beets, or turnips and with winter squash or onions, which keep until Christmas when they begin to wilt. Canning on a cold winter's day, when a heavy fire is needed in the kitchen for warmth, is both pleasanter and cheaper than in summer. Economy of cans and store-room space is also effected. It is wise when canning stored vegetables to make them fresh by soaking them in cold water before removing the skin.

Serving vegetables becomes a problem when the same kinds must appear day after day. Left-over material from creamed and scalloped vegetables may be made into souffle, when eggs are cheap in spring, and served as a most acceptable meat substitute. The creamed vegetable should be rubbed through a sieve. For each one-third cup of pulp and white sauce mixture, the beaten yolk of one egg should be added and the whole mixed well. The stiffly beaten white should next be folded in. A buttered baking-dish or ramekins may be used, being filled half full. The dish should be placed in a pan of water and the souffle cooked in a moderate oven for forty minutes, or in the case of ramekins, for twenty minutes. It should be served immediately.

New England "vegetable hash" of beets and corned beef chopped together and fried without browning adds a bit of color to the supper table. The "vegetable dinner" of cabbage, turnips, parsnips, carrots and potatoes, all boiled together with corned beef, and with beets cooked separately, but served on the same plate, has both a flavor and odor all its own. This odor lingering on through the week has earned the just displeasure of careful housewives. An excellent soup can be made by dicing a mixture of canned vegetables, draining off the water, and stewing them in a sauce pan with a little beef or bacon fat, using one measure of meat to one of diced vegetables. After ten minutes cooking, they should be mashed for thickening. Raw diced potato and the juice drained off the canned vegetables should be added, with a bit of onion top for color and flavor should be added. The mixture should be stewed till the potatoes are soft, and served with toasted bread sticks.

Onion make good greens. An onion bulb set among some pebbles with water in a glass and kept on the kitchen window sill will produce garnish for several salads. Carrots, too, may be coaxed to grow feathery leaves after the parsley, potted in the fall, has been entirely used.

A savory dish can be made by parboiling whole, a good-sized, well-formed cabbage, until the leaves are limp enough to be laid back one by one away from the center. It is then set upright in a deep baking-dish, the leaves are closed again, and a few pieces of frankfurter sausage are placed inside each leaf. A cup and a half of white sauce is poured over the whole cabbage which is then baked for twenty minutes. Seasoning and garnishing of various sorts may be added. Bits of pickle, sweet red pepper, and bacon are most often used, as well as many left-overs.

Attractive salads can be made with cooked vegetables, sliced and well seasoned with French dressing before being served. This process of seasoning is called "marinating." It consists in soaking the material in a liquid made with one part of vinegar and three parts of oil with salt and pepper to suit the taste. This may be kept in a jar and used over and over. It is necessary to shake thoroughly before pouring it out and to strain it before returning it to the jar. Fresh vegetables which are likely to wither can not be so treated. They should have a few teaspoons of dressing sprinkled over them just before being served.

Raw cabbage shaved very thin makes a dainty succulent salad. The favorite dressing for it consists of mild vinegar, or vinegar and water, each cup of which is flavored with two teaspoons of sugar, one-half teaspoon of salt, and a little paprika. The liquid from horse-radish adds agreeable spice to the flavor of the cabbage.

Wild greens begin to show themselves early. Pepper cress, sour dock, dandelion, marsh marigold, and wild mustard are among the favorites. In cooking them, care must be taken to preserve both flavor and delicacy of texture. Cleaning is much simplified if the leaves can be left attached to the top of the root till the greens have been picked over and washed once. Then they should be cut near the base, the central bud being preserved, and the leaves should be separated. In cooking, very small quantities of water should be used, or better, the vegetables should be cooked over water in a steamer, excepting dandelions which may well have the water changed during boiling to reduce the bitterness. The leaves should be cooked only until well softened, not longer lest the color be spoiled. They should then be drained thoroughly, seasoned with butter, and served with a garnish of hard-cooked

A good flavor is obtained by boiling a piece of salt pork with the greens. In this case, no butter is needed in serving. Cold greens, well seasoned with French dressing, make excellent salad. Early lettuce makes good greens. Left-over leaves may be rubbed through a sieve, and with the water in which they were boiled, may be added to a thin white sauce to make a cream soup.

Radishes, pared, boiled and creamed make a delicious substitute for young turnips. If the water is changed once during the cooking, they may be used in this way after they have become too strong and old to be served raw.

This carries the season up to the time of preserving for the following winter. After all, the solving of the problem lies here. The housewife who has time, facilities, and space for canning, drying and storing fruit and vegetables is the one whose winter table best serves the needs of her family.





BULLETIN ON POTATOES AVAILABLE

Edward Van Alsyne, Director of Farmers' Institutes of the New York State Department of Agriculture, announces that there is ready for distribution Bulletin 77 on "The Potato Industry in New York State." This was issued as Bulletin 57 in March, 1914. The demand for it has been so great that the supply has been for some time exhausted.

VALUE OF FARM LANDS INCREASING

According to reports from the Bureau of Crop Estimates the value of farm lands of the United States, without improvements, is estimated at \$45.55 per acre, as compared with \$40.35 a year ago. The census reported the value of farm lands in 1910 as \$32.40, and in 1900 as \$15.57 per acre.

In recent years the value of farm lands has been increasing at the rate of about five per cent a year, or approximately \$2 per acre per year. The exceptional increase of the past year may be explained partly by the reaction in the southern cotton states following a temporary depression last year, and partly by the stimulus given by the war to prices, particularly of grain.

Increases have been general throughout the United States, the only noteworthy exceptions being orchard lands and some irrigated lands in the Northwest, which apparently had been overvalued before.

RANGERS CARRY TWO-AND-A-HALF POUND TELEPHONE

A portable telephone, made of aluminum and weighing two and one-half pounds, the invention of a Forest officer, R. B. Adams of Missoula, Montana, will be part of the regular equipment of patrolmen on the National Forests the coming field season. This instrument is regarded as a great improvement over the set formerly used, which weighed ten pounds.

It is said that a field man equipped with this telephone, a few yards of light emergency wire, and a short piece of heavy wire to make the ground connection can cut in anywhere along the more than 20,000 miles of Forest Service telephone lines and get in touch with the headquarters of a supervisor or district ranger.

Forest officers say that these portable phones are especially valuable in reporting fires and other emergencies with the least possible delay, and also in sending instructions to field men and keeping the district rangers informed as to the progress of work going on in the field, thus supplementing the regular telephone sets installed at lookout points, ranger stations, and at convenient intervals along Forest Service roads and trails.

AGRICULTURE HAS SMALL EN-ROLLMENT

There are now engaged in agriculture 375,000 persons in this State, out of the total population of 9,687,744. There are 57 cities in the State and 465 incorporated villages, both having a population of more than 8,000,000, leaving only twenty per cent in the rural districts, part of whom are engaged in agriculture.

High prices of farm products, the independence of farm life, good roads, improvement in educational advantages, prospective advance in land prices, and the assistance and instruction now given to agriculturists, is resulting, however, in a return to the land.

Professor H. A. Sill, in a recent lecture on the "Fall of Rome" said: "If any lesson is to be drawn from the fall of Rome, it is that there is no social problem more important than the agrarian question. The welfare of a state is dependent on the maintenance of an independent farming class. This is what makes the work of our College of Agriculture so significant and so important."

CAN YOU BEAT THIS?

A novel plan of advertising Northwestern apples was recently inaugurated in New York City. An enterprising firm furnished 1400 apples of the Skookum brand for distribution to the congregation of Grace Methodist Episcopal Church of that city at a service in which the minister preached on "God and Apples." The sermon was illustrated by moving pictures showing spraying, picking, and packing operations.

From Fruit and Produce Marketer, Portland, Oregon.

DEEP SNOW ON THE NATIONAL FORESTS

According to Forest Service officials the unusually heavy snowfall which has signalized the past winter in most of the West has materially affected National Forest business. Timber sale receipts have decreased in some regions because logging and milling operations have been hampered by deep snow and exceptionally cold weather. The same factors have given stockmen using the National Forest ranges much concern, although as yet there have been no severe livestock losses reported. The foresight of the stockmen in providing winter feed, which is now generally practiced, makes a recurrence of the former immense losses very unlikely. The damages caused by the snow and resulting slides and floods to Forest Service trails, telephone lines, and other permanent improvements were quite considerably heavier than usual and their repairs make much spring work for the rangers.

EXTENSION FUNDS

The Federal Department of Agriculture, in commenting on the sources of the funds for extension, says:

The total amount set aside for this work is \$4,782,000, of which \$1,080,000 is from Federal Smith-Lever funds, \$925,000 from appropriations to the United States Department of Agriculture for farmers' cooperative demonstration work, and \$110,000 from other bureaus in the department. These amounts make a total from Federal sources of \$2,115,000.

Of the funds contributed from sources within the State, \$600,000 is from State Smith-Lever funds, made up mainly of direct appropriations of the State legislatures. In addition to funds used under the Smith-Lever Act, \$628,000 is appropriated by the State legislatures for extension work, \$225,000 by colleges from funds under their immediate control, \$921,000 by country authorities, and \$292,000 from miscellaneous sources.

The totals for other important items are as follows: Administration, \$391,-000; boys' club work, \$237,000; movable schools, \$218,000; printing and distribution of publications, \$108,000; extension work by specialists in the following lines—dairying, \$148,000; farm management, \$96,000; live stock, \$82,000; agronomy, \$70,000; horticulture, \$58,00; rural organization, \$32,000; agricultural engineering, \$30,000; plant diseases, \$28,00; and poultry, \$23,000.

THE CORNELL COUNTRYMAN

M. C. BURRITT, Pres. J. A. VANDERSLICE, Vice-Pres. B. W. KINNE, Sec'y-Treas.

NEW YORK STATE COLLEGE OF AGRICULTURE AT CORNELL UNIVERSITY, ITHACA, NEW YORK

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The Cornell Countryman rejects all advertisements which are in any way objectionable or likely to prove fraudulent; and so far as it can do so, assures its readers that only reliable advertisers are represented in its pages.

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Valedictory

cooperation.

With the publication of this issue the 1915-16 board of editors and managers steps out and gives way to the recently appointed 1916-17 board. We feel sure that they will conduct The Countryman with great success and pave the way, as we have tried to do, for even greater successes in the future. We wish to thank all our readers and contributors for their support during the past year and we hope they will give the new board the same

The retiring board looks back with a certain amount of pride to the following achievements:

It has kept The Countryman at the head of the publications of its type, in appearance, in editorial make-up, in advertising and in circulation.

It has presented in Dean Galloway's series on "The Man on the Land on the Other Side of the World," a set of papers which would have been notable in any agricultural publication. Just as notable have been the series under the title, "An Agricultural Survey of New York State," by Professors Fippin and Livermore, which have been continued throughout the year and which have furnished thoughtful discussions of interest to everyone who has the welfare of the farming business at heart.

It has kept its columns notably free of objectionable advertisements.

The whole trend of the year has been to present in popular form the best in recent agricultural development, from those who may be assumed to be authorities in their respective fields. If we have fallen short in any particular we invoke on the part of our readers the sentiment expressed in the well-known couplet:

"Be to our faults a little blind, And to our virtues very kind."

The Faculty Advisory System

"What is the faculty advisory system and what is it for?" Thus asks the freshman at the close of his first year when the time comes for him to chose a professor for his next three years. This is a hard

question for anyone to answer and if a census were taken of the undergraduate body there would be a very inconsistent lot of answers. The majority of the students would say that theoretically it is good, actually it is a failure. And to the average student a faculty advisor is a mere figure-head whose signature is all that counts. There are quite a few cases where faculty advisors have meant more than this, but they are the exception rather than the rule.

The inefficiency of the faculty advisory system probably has resulted from the excessive growth which the college has gone through during the past decade. It has simply been lost in the rush because the attendance to other matters was more urgent. The need of an efficient advisory system at this time is all the more urgent because of the many new courses which have been recently added to the University curriculum. It has come to a time when it is well nigh impossible for any student not well acquainted with this curriculum to choose a wise course of study for his work.

Since nearly all the students are unacquainted with most of the courses it is absolutely essential that we have a good advisory system. The Countryman proposes that a faculty committee be formed for the purpose of investigating the system and making recommendations for increasing its effectiveness. This committee should try to get the student view-point in the case and try to work out a system which would be of greater value.

Policy

Is the College of Agriculture a big corporation or The Open Door institution, or is it, as it always has seemed to be, an organization where students and faculty meet on a friendly basis and feel at liberty to speak to them as

friends? There is more or less a sincere desire on the part of most students to be intimately acquainted with their instructors, but it is a desire which will not carry them past the barrier of a series of closed doors behind which not a few of the faculty live on the campus.

An ideal condition to our mind would be one where, at specified hours, students of the College would feel at liberty to call on their professors with practically no formality. Secretary Betten of this College has set an example which might well be followed by others of the faculty. At specified hours any undergraduate can go into his office and walk direct into his sanctorum with no formality about it whatever. If the faculty want to come in closer touch with the students, as they ought to do, then it would be a wise plan for them to try the open door policy for a while at least.

Road to Wealth?

In this issue of The Countryman is reviewed a Is Farming a Royal recent publication of the local experiment station on the cost of producing milk in a dairy section near the New York market. The results come

from a survey taken in an average dairying community, one which has stood the test of time and is thoroughly typical. The costs of producing the milk were figured according to recognized farm management standards which includes, as one of its most important items, five per cent interest on investment. It is a notable fact that in nearly every case milk was produced at an actual loss.

Here is a product which is such an important article in the food of city people that it has become a commodity which can not be done away with. Yet it is produced in this particular region at a loss. If this section is as typical as it is said to be, most of the milk of the State must be produced at a loss.

Dairying is one of the oldest and most stable systems of farming. It is one of the most fundamental, for diversified farming demands that livestock be kept on a farm to conserve the fertility. It might be well for those who expect to make a fortune in farming to consider such facts, rather than the fiction which tells how a city man made ten thousand dollars from a ten acre farm in ten months.

The Course in Agricultural Journalism

Courses may come and courses may go, but Agricultural Journalism has come to stay, it has filled a place in the studies of the College which had for a long time been vacant. Nearly all the

other agricultural colleges thorughout the country recognize the need for agricultural journalism and have met it by providing suitable courses, probably more comprehensive than the one here given.

Judging by the enrollment this term ,it is one of the most popular among the students not merely because it is a one hour course which could be easily fitted to a course of study. Certainly those who registered for it with the idea that it would be an easy course have round it quite otherwise, and probably have had to work as hard or harder for that one hour than for many others. Its popularity is due largely to the fact that it gives good cultural training by one of the most competent members of the faculty. We hope that this course is here to stay as it is in the other state colleges, and that Cornell will lead in this department as it does in so many others.

Dear Mr. Vanderslice:

An Apology

As you will remember I revised Mr. Crocheron's article in the October issue of *The Countryman* at your request.

Mr. Cocheron has written me that the revisions did not meet his approval, and that he wishes to disclaim all responsibility for them. I hope you will allow me space to enter Mr. Crocheron's disclaimer and to accept, on my part, full responsibility for changes which were made to render the article acceptable to a New York audience. What I did was in the interests of *The Countryman*, and without full consideration of the magazine's California readers. For this I am most sorry and gladly apologize to the author.

Very sincerely, (Signed) BRISTOW ADAMS.

The June issue of *The Countryman* will contain a A June Feature keyed photograph of the senior class of the College of Agriculture. Every face will be clear and easy to recognize. In future years you will want this engraving to recall some of your classmates. This issue of *The Countryman* and a full year's subscription will be sent for the price of the regular subscription. You will need both. Better subscribe now and be sure of getting a copy of the June issue. It is to be printed in a limited edition.

Within ten months agricultural journalism in America has lost two of its greatest leaders, two who were humanizing it and bringing it to the people. First Joe Wing went and now we have lost "Uncle" Henry Wallace. These men were great rural writers because they were countrymen at heart and because they wrote from the heart. They did not pose, they did not use big words; they simply spoke of country things to country people. All of us cannot do this, but

they have made us realize that their way was best.





Campus Notes

"Ag" Leads in College Athletics The College of Agriculture has been especially active and successful in inter-

college athletics this term. The basketball team won the championship, playing six games and losing none, and held the varsity to a 24-22 score in a hard fought benefit game on March 29. In the intercollege board track meet, held on April 1, the College easily took first in all three classes, Mechanical Engineering being second and Arts third. Agriculture also scored third in the indoor athletic carnival, held in the Armory on April 3.

The next event of importance is the intercollege regatta. The following men are reporting daily for practice on the Agricultural crew: D. C. Taggert '16, S. C. Garman '17, C. H. Lynch '17, R. C. Kuhn '17, L. H. Taft '18, I. C. Loope '19, A. L. Miller '19, C. A. Shafer '19, W. H. Simonson '19, W. D. Thompson '19 and W. D. Akehurst '19.

The March
Assembly

Assemb

March 28. Professor W. W. Rowlee '01 gave an illustrated lecture on "The History and Development of the University Campus." By means of slides depicting early scenes in the history of the University the speaker was able to show the gradual growth of the institution from a single stone building in

the midst of deep gulleys to the present aggregation of colleges on a beautifully graded lawn. Practically all the older buildings and landmarks were depicted in the process of development.

A. H. Main, '16, spoke on college athletics and R. J. Davis rendered a piano solo. After singing several old-time songs the meeting adjourned.

Future assemblies will be held in Roberts rather than in Bailey Hall, the purpose being to make the meetings less formal and more homelike. The policy of having an illustrated lecture at each assembly will be retained. Next month Professor R. S. Hosmer will speak on "The Hawaiian Islands."

Entomology Clubs Are Becoming Well Established Jugatae is one of the oldest and most active clubs of the College of Agriculture. Found-

ed in 1896, it has held meetings every week for twenty college years and in addition, special meetings during the summer months. This means that before long the club will hold its thousandth meeting.

The plan of the club is extremely simple and informal. There is but one officer, a chairman, who arranges meetings and programs. There are no fees nor "feeds", no constitution nor by-laws. Membership is automatically bestowed upon persons sufficiently interested in semi-technical entomology to attend the meetings. Ordinarily

these meetings are addressed by members who are doing special work in the department, but this rule is not ironclad. Some of the most distinguished entomologists in the world have delivered addresses before the club.

The Journal Club is the formal seminary club of the department. Its meetings are held under departmental control from November to April of the school year, its members being left free for field work during the spring

Department The Classes Take Dairy Industry went to Rochester during the Spring Trips Spring Recess in order to study the methods of ice cream

manufacture employed by the largest concerns of that city. The party was in charge of Professor W. W. Fiske.

Immediately after spring vacation, students in "Market Products" course seven of the Poultry Department, took a three-day trip to New York, where they studied the most modern methods of handling food supplies. The produce houses, the public markets, the Mercantile and Produce Exchange and the commissary departments of some of the larger hotels were visited.

Representatives of the City Market Bureau, members of the State Commission of Foods and Markets, and members of the New York City Board of Health addressed the students. Professor E. W. Benjamin, T. B. Charles and W. S. Young were in charge of the party.

That prevalence of oat A Campaign smut which caused a loss Against Oat of more than two million dollars in New York State in 1915 and which threatens to be equally destructive this

year, has caused the extension department to enlist the cooperation of various agencies about the State in an aggressive campaign of prevention. They have adopted the slogan, "Safety First: Better Be Safe Than Sorry."

As a means of showing the farmers how this safety may be secured they are sending a demonstration car over the New York Central Railroad, to reach more than twenty communities in Lewis, Jefferson, St. Lawrence and Franklin The car contains the Cor-Counties. nell exhibit of varieties of oats and other attractions of similar nature, but the main emphasis has been placed upon a demonstration of the proper methods of treating seed oats to prevent smut, arranged in cooperation with the Department of Plant Path-Moving pictures illustrating the same operation are shown whereever electric current is available.

The Department of Plant Pathology has enlisted the further cooperation of the Federal Department of Agriculture in the issuance of a leaflet which gives directions for the treating of the seed under the system which investigation has shown to be the most satisfactorythe formaldehyde treatment.

Floricultural Greenhouses

The greenhouses of the Department of Floriculture, which at Their Best come all visitors on week days, are now

filled with attractive spring plants. The bulbs, carnations, roses and sweet peas are all in bloom. In addition to the plants which are grown for purposes of class instruction, considerable work is being done of an investigational nature. Several of the students are working on various problems. Among these problems is one with Lilium longiflorum, or the Easter lily, to determine the value of plants grown from seed in comparison with those grown from imported bulbs. For several years the imported lilies have been susceptible to attacks of diseases which have made difficult their successful culture. If these plants could be produced from seed much of the disease might be eliminated. Consequently a large number of seedlings were obtained from the Department of Agriculture at Washington and the development of these plants is being studied. Crosses are now being made preparatory to the production of seed for another year.

One student is investigating the varieties of the Boston fern. This species has such a tendency to vary that there are many crested and divided forms of the plants; somewhat over a hundred types of this fern are now under investigation.

Another study is being made of the Aquilegia, or Columbine family and many seedlings which have resulted from crosses made last year are now coming into bloom in the greenhouses. Similar studies are being made with the garden Iris, carnations and roses.

The orchids collected in the Phillippines by Dr. A. B. Ward are in bloom from time to time depending upon the natural flowering season of the plants. The department is carrying on investigations with the newer varieties of Sweet Peas and there are now in flower over a hundred of the newer types and varieties. Many of the best seedling herbaceous perennials are now developing and these will later be planted in the herbaceous garden near the Countryman Building.

F. L. Griffen, for-

New Professor for merly on the staff Rural Education of the University

of the University of Oregon, is now at Cornell, engaged by the Department of Rural Education in the capacity of Professor of Junior Project Work. Professor Griffen has had wide experience in junior extension work on the Coast, where he worked with Boys' and Girls' Clubs. In New York the work will not be carried out through clubs but by the utilization of certain factors of the state education system already existing. The units of the scheme will be those schools which teach agriculture, supervision being by the agricultural teacher and district supervisor in cooperation with the college authorities. It is planned to allow Regents' Credits toward high school entrance for those members of elementary schools who successfully carry out projects.

Conservation
Lecture

Conservation

Lecture

Conservation

Commissioner, addressed an audience, which crowded Roberts Assembly, on the subject of, "Conservation Work in New York State." Moving pictures illustrated his remarks.

The Commissioner divided the state conservation work under four heads: fish, game, forests and water. He spoke of the eleven fish hatcheries already in operation but ventured the opinion that many of the fish which have been sent from these hatcheries for transplanting have been wasted by a lack of information as to habitat needs on the parts of the persons supplied. Amateur aquiculturists have attempted things approximate to growing palms in the The state also mainpolar regions. tains three game farms, upon which they have had particular success in raising the ring-neck pheasant. The speaker called attention to the stillpresent need of a wider understanding of the state game laws, citing an instance in which a judge of the New York bench was arrested and could only plead ingnorance.

Forest hatcheries are maintained to restock parks or to furnish good stock at cost to persons who desire to make plantings. The Commissioner stated that several Cornell men were employed in this branch of the service and that he was looking for three more. L. A. Zinn, '16, has already been selected to do work in Forest Pathology.

Commissioner Pratt's visit was under the auspices of the Conservation Committee of the College. He was a guest of the President during his stay here.

Extension The extension department has brought to a Schools End close its series of extension schools throughout the State and has issued the following tentative figures in regard to the results of the work for the year. During the session of 15 weeks, 59 schools were held in 33 counties. The average en-

rollment was 33, the average number of instructors three and the average age of those in attendance 39 years. The program of most of these meetings was of a general character but where a section demanded a specialized study of some particular phase of agriculture, it was supplied. These specialized meetings are said to have met with especial success. Two dealt exclusively with poultry and four with fruit.

The schools were held in any portion of the state where there was a demand for them. They lasted a school week and ran from nine until four o'clock, each day. In view of the results from this year's work it is likely that even a greater number will be held next year.

MISCELLANEOUS NOTES

The Department of Poultry Industry is seeking to co-operate with various farm bureaus throughout the State in the matter of obtaining better marketing organization for poultry products. At Collins Center, Erie County, a group of women have already organized an effective association. One of their number, appointed for the purpose, receives, grades, and ships the eggs under a special trade-mark.

Conflicts with the University calendar have caused the women of the university to postpone their projected pageant until next fall. This postponement has made necessary the election of Vi Grahm '18, as General Chairman. Miss A. MacDonald '17, the original incumbent, becomes President of the Student Government Association in the fall and will not be able to devote time to the pageant.

W. S. Young '16, of the Poultry Department has been appointed to take charge of the Poultry Producers' Association of Ithaca, with headquarters at the corner of Cayuga and Cascadilla Streets. The association is now shipping about fifty cases of eggs every week.

Dr. J. A. Bizzel of the Department of Soils is spending his vacation at Fayetteville, North Carolina. He will return on May 10.

Professor E. O. Fippin, of the Department of Soils, spoke to the Farmers Club at Portland, Maine, on April 10. His subject was "Drainage: An Essential of Soil Improvement."

The plan to hold the spring boat races over a course on Cayuga Lake has been abandoned. The regatta will be held at Poughkeepsie as usual on June 17.

Spring Day comes this year on May 27. The circus idea will supplant the county fair idea of former years, and many original "stunts" are promised.

C. E. Curtis, Superintendent of Buildings, has promised that both of the new dormitories will be ready for occupancy by the opening of the University in the fall.

A. H. White '12, and Frank Lathrop '14, former editors of *The Countryman*, and A. W. Wilson '15, a former business manager, were among recent visitors to the campus.

The summer session of the University will open July 5 and extend to August 16. It is expected that last year's registration of 802 men and 707 women will be exceeded, and arrangements are being made to furnish accommodations for women in three dormitories and, if possible, place some of the men in the new dormitory units. Professor George P. Bristol, of the Department of Education, will be again at the head of the school. The German department will again maintain a rooming house for women students in which only German will be spoken as a basis for practice in conversation.

According to statistics compiled by the World Almanac, Cornell ranks second among the universities of the United States in the matter of annual income, being surpassed only by Harvard. Cornell's income is \$3,139,530, while Har vard's is nearly \$700,000 greater. In the matter of endowment, Cornell stands sixth; in the number of students, Cornell ranks eighth, but is third in the number of instructors engaged, having a total of 750.

The late spring and a consequent shortage of mud postponed the traditional spring rush long after the usual time, but the Freshman Banquet was held as usual in the Armory on March 25. Six hundred were in attendance and the affair was thought to be one of the most successful in history. Doctor A. L. Sharpe, Doctor H. W. Van Loon '05, Lieutenant Twesten, and Weyland Pfeiffer '16 were the speakers of the evening.

On May first, H. A. Hitchcock '00, of New York City, will fill the place of H. W. Peters '14, Secretary of the University, who has resigned to accept a business opportunity.

On September 8, the Department of Military Science will open a two weeks summer camp at Ithaca. Instruction will be similar to that given at Plattsburg, but necessarily less intensive, and all students who can do so are being urged to attend the Plattsburg camp. If the capacity of six hundred men is not taken up by members of the cadet corp, registration will be thrown to the entire undergraduate body.

The first issue of the Cornell Bulletin appeared on March 28, 1916. This publication is issued daily by the following committee of undergraduates to meet the need of an adequate medium of communication among women students: Mary Albertson '17, Editor-in-Chief; Helen Carter '17, Frances Cuff '17, Florence Boochever '18, Vi Graham '18, Reba Beard '19, Eliza Pollock '19, Gertrude Bates '16, ex officio.

The office of the State Leader announces the appointment of three new farm bureau managers: E. W. Cleever '07, to Warren County; J. H. Phillips '10, to Essex County, and R. F. Pollard '15, to Schoharie County. Mr. Pollard's place as instructor in the Department of Farm Management will be filled by C. V. Noble '15.

Miss Edna A. Rich, President of the State Normal School of Manual Arts and Home Economics at Santa Barbara, California, was the guest of the Home Economics Department at Cornell, Thursday, March 23. Miss Rich gave a talk, after which tea was served.

The Cornell Women's Student Government Association held a Tea Dance at Sage College on the afternoon of April first. Admission was by invitation only.

Star Song

The seeing stars swing on and on, Across the hills, across the sea. All round the earth they look for worth To tell to me.

They move upon the wings of dusk, And stand their watches silently; Then go away at dawn of day More men to see.

And when the busy day is done, They come to tell me tales anew. This may not be astronomy But it is true.

A. P. N. '18.

A Seneca Legend

Old Gauwadine in his lodge Alone is he:

He blows his breath across the fields— Ugh-ee! Ugh-ee!

There comes a stranger to his deer, With yellow hair; The old man's face with fury frowns

To see him there.

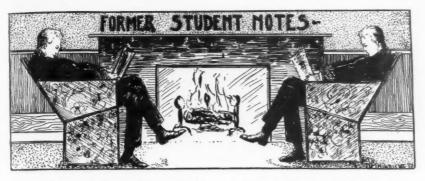
Begone! he shieks. Thou are Gohay,

Mine enemy.

Go, or the death-frost of my breath
Shall wither thee!

The stranger smiles, and lo! the lodge Melts quite away And blossoms spring up everywhere; And reigns Gohay.

Ludwig Stolz Mayer '18.



'83, B. Agr.—Harry N. Hoffman's present address is 603 Hoffman Street, Elmira. He has been engaged in the growing of flowers and ornamental nursery stock.

'95, M. S. A.—Samuel H. T. Hayes writes that he is in charge of the bacteriological department of the pharmacentical specialties manufactured by Hynson, Westcott & Co., at Baltimore, Maryland.

'02, W. C.—W. H. Langworthy is breeding Holstein-Friesian cattle at East Hamilton.

'03, W. C.—Since leaving Cornell Bruce M. Wilmer has been a member of the Maryland Legislature. With his brother he is interested in farming and lumber in that state.

'05, B. S. A.—Ray C. Simpson is in the nursery business with his brother near Monticello, Florida. Their 380 acres includes, beside the nursery stock, forty-three acres in pecan and orange groves.

'06, M. S. A.—J. W. Gilmore is Professor of Agronomy at the College of Agriculture of the University of California.

'06, B. S.—C. F. Shaw is Professor of Soil Techology at the University of California.

'06, B. S.—H. F. Button is now in charge of farm crops and soil fertility at the New York School of Agriculture, Farmington, Long Island.

'06 B. S.—Morgan W. Evans is Assistant State Leader for Oregon with headquarters at the Oregon State College of Agriculture.

'07, Sp.—Harry W. Meyers is managing the Pencoyd Farm at Bala, near Philadelphia, Pennsylvania. The livestock includes thirty dairy cows whose products are sold in the adjacent metropolis. Alfalfa, corn, wheat, timothy and potatoes are grown. Registered stock is raised for sales purposes.

'07, Sp.—Miss Lena Thomas is in charge of the play ground at Duquesne, Pennsylvania, which is maintained by the steel works for the children of employees. She plans to return to Cornell next year to continue her studies.

'08, W. C.—Earl F. Fowler is now managing his father's farm at Baldwinsville, where he breeds Holstein cattle and grows grain and tobacco.

'08, B. S.—C. J. Hunn is now at the University of Porto Rico, Mayaguez, Porto Rico.

'08, B. S.—Vaughan MacCaughey is Professor of Botany at the College of Hawaii, Honolulu. He has made scientific explorations of the islands of Oahu, Hawaii, Maui, and Kauai and has contributed much to the press in addition to his pedigogical endeavors. Each summer he has made lecture trips to Ithaca under the auspices of the Chautauqua Institution and the summer sessions of Cornell and California.

'08, W. C.—John C. White has an 85 acre general farm at Sagaponack. The livestock kept includes seven horses, two cows, eight hogs, and a large flock of chickens. The principal crops grown are hay, corn, wheat and rye with potatoes as a cash crop.

'06, Sp.—H. E. Haslett is managing a farm of 130 acres at Seneca. Hampshire sheep and large Yorkshire hogs are bred extensively.

'10, W. C.—George Sprague is running a farm at Ipsowich, Massachusetts. In the winter he teaches agriculture in a Vermont High School.

'10, Sp.—Ray L. Williams is superintendent of the estate of E. LeRoy Pelletier at Orchard Lake, Michigan. Holstein cattle, Shetland ponies, Mulefoot hogs, Kentucky saddle horses, Russian wolf hounds, bronze turkeys and white wyandottes are bred.

'11, Sp.—James G. Cochrane writes the Countryman that he is managing a farm at South Bayfield, Mass. He calls attention to the error of confusing him with Andrew J. Cochrane '12, who is farming with his father at Ripley, New York.

'11, M. S. A.—C. S. Wright is located at Riverton, N. J., where he is engaged in plant breeding and other experimental work on one of the Campbell's Soups farms. A. W. Sheets '14, Sp. is associated with him in this work.

'12, B. S.—Mrs. Floyd Bell (Mildred Dudley) is still at Texas College, Texas, where Mr. Bell '11, B. S. A. is Professor of Animal Husbandry.

'12, B. S.—E. L. Bernay is publicity agent for the Manhattan Opera Company of New York City.

'12, B. S.—D. C. Carpenter is with the Sharples Separator Company at Westchester, Pennsylvania.

'12, M. A.—Wm. H. Darrow was instructor in horticulture at the University of Maine during the year 19131914. Since then he has been horticulturist at the Leeds Manor Orchards, Markham, Virginia, and later started a fruit farm for himself at Putney, Vermont. During the past winter he has had charge of the pruning for the Potomac Valley Orchard Co. at Pearre, Maryland.

'12, B. S.—Harry Embleton is New York manager of the Sharples Cream Separator Company.

'12, B. S.—Claude Emmons is married and living at Hotel Latonette, Bayonne.

'12, B. S.—T. J. H. Grenier is with the Sharples Cream Separator Company at their Chicago branch office.

Ex. '12—Lester B. Hayes is living at Cortland. He is married and has two children.

'12, B. S.—Anna E. Hunn has remained at Cornell as manager of the home economics cafeteria and instructor of institutional management. Miss Hunn now lives at 923 North Tioga St.

'12, B. S.—B. Tyson is an auditor for Price Waterhouse & Co., New York City. His address is 5 Fifth avenue.

'12, B. S.—For two years after graduation, H. B. Munger was at the office of farm management at Washington D. C. In June, 1914, he accepted a position as head of the Farm Management Department at Iowa State College of Agriculture.

'12, B. S.—Hawley B. Rogers, former president of the College glee club and a member of the 'varsity glee club and C. U. C. A. Council is now Farm Bureau Manager of Chatauqua County.

'12, B. S.—L. W. Smith is at present working in the office of the University registrar.

'12, B. S.—S. H. Stephenson is managing a farm near Ithaca.

(Continued on page 706)

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How Types of Farming in New York Are Determined

(Continued from page 664)

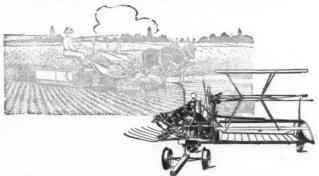
fact, many farmers in the alfalfa belt find it more profitable to sell their alfalfa than to feed it and the great majority of the eastern dairymen still buy the bulk of their protein. Possibly hardier strains of alfalfa may be discovered some day that will alter this condition.

Climatic factors influence to a certain extent the distribution of alfalfa in New York. In some parts of the State severe winters probably limit success with the crop. A growing season of at least 150 days seems to be necessary for good yields and a longer season often means one more cutting. Rainfall influences the yield of alfalfa very noticeably, especially the yields of the later cuttings. Though the long roots may be drawing moisture from underground supplies, every alfalfa farmer welcomes a good shower when waiting for the third or fourth cutting. Rainfall probably explains the greater concentration of alfalfa in Onondaga and Madison counties. In these counties the average rainfall for April to August inclusive is eighteen to twenty inches, while west of them it is only fourteen to sixteen inches. The rainfall for this period averages nearly twenty-five per cent greater in the eastern part of the alfalfa belt than in the western part. Better yields and longer life to the stand of course results from this.

A correlation between alfalfa production and dairying is quite commonly supposed to exist. Syracuse is said to owe its Holstein fame in part to the nearby alfalfa fields. As a matter of fact, in this State there really is very little correlation between the two, desirable as it would be. As will be shown in a later article, cows are kept primarily where there is land that has

(Continued on page 692)

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How Types of Farming in New York Are Determined

(Continued from page 690)

to be pastured, but most of the alfalfa of the State is grown where there is relatively little of such land, or where, in fact, it has actually displaced pasture. In most of the New York dairy sections where people most desire to grow alfalfa, they have not succeeded in doing so profitably. In many sections where alfalfa is raised extensively, dairying is of little importance. In fact, many farmers raising alfalfa have discarded livestock. Onondaga County has fewer cows per farm than most of adjacent counties. Apparently Syracuse owes its Holstein fame to the fact that it is the railroad center of surrounding dairy regions rather than to the nearby alfalfa fields.

Although alfalfa growing in New York is still in an unsettled condition, it seems safe to say that the place of alfalfa in the system of farming depends first upon the soil, second upon competition with other crops and third upon climatic factors. It requires a soil well supplied with lime, well drained and preferably deep. petition with other crops has tended to limit alfalfa to the hillier limestone soils and especially to the drumlins of central and western New York. Heavier rainfall in central New York accounts for the greatest concentration of the crop there.

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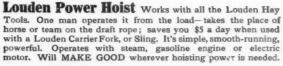
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Set the Louden Balance Grapple Fork across a load and it will take the entire width of an 8-foot rack at a single lift. Half a ton at a time will not strain it. You can put away the biggest load in five minutes. Moves straw, alfalfa, or clover as clean as timothy-grips it tight; no scattering or drib bling. What other hay fork will do this? Built of the finest steel, especially made for us. Light, strong, perfectly balanced, never fails.

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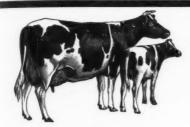
(Continued from page 668)

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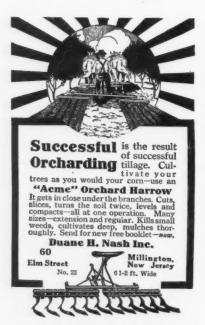
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Cover Crops for the Peach Orchard

(Continued from page 673)
able, since a single crop does not always possess all desirable features.

Home experiments with cover crops

Buckwheat, clover, cowhorn turnips, and vetch were planted in six-years-old peach orchards of R. S. Rudman at Spencerport, New York, on August 4, 1915. These cover crops were sown alone in the following proportions per acre:

Buckwheat	1	bushel
Clover	8	pounds
Cowhorn turnips	2	pounds
Vetch	2	pecks

The following are the combinations and amounts of seed used per acre:

	1	
Cowhorn turni	ps 1½	pounds
Clover	5	pounds
Vetch	1	peck
	2	
Buckwheat	1	bushel
Cowhorn turni	ps 1½	pounds
	3	
D 1 1	4/	1 1 -1

Buckwheat ½ bushel
Cowhorn turnips 1½ pounds
Vetch 1 peck

On November 26 these crops were carefully observed. The buckwheat had in all cases gone down with the frost, but the clover, the cowhorn turnips, and the vetch were still green and growing.

Turnips, whether used alone or in combination, make an excellent crop, for their long, deep roots work down and open the soil. Then they decay and add considerable humus to the soil. Many of the turnip roots measured 18 inches in length and from three to five inches in thickness. Mr. Rudman estimated that the roots and the tops of one acre of cowhorn turnips will weigh over fifteen tons. This shows the large amount of plant food that is plowed under in the spring from such a cover crop.

Buckwheat is also a good crop for adding humus, because it makes a rapid

(Continued on page 704)

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Fig. 180





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Cover Crops for the Peach Orchard

(Continued from page 700)

and abundant growth before it is killed by the frost, after which it decomposes.

Vetch, because of its creeping nature and its ability to make a more rapid growth than clover, is probably the best of the legumes.

Not only are cover crops the cheapest fertilizers, but they are also money and labor savers for the grower. Peach orchards that are not planted to cover crops are usually plowed in both fall When cover crops are and spring. used, the orchard is not plowed in the fall, which means a saving in time when the grower must devote his time to marketing the crop. In the spring, when it is time to spray, many orchards are so wet that it is extremely difficult to transport spraying rigs. Cover crops are a great advantage in this respect, because they permit transportation of spring rigs early in the season.

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We would be pleased to quote you whenever in the market for—Scratching Grains—Poultry Mash—Little Chick Feed—Growing Ration—Separate Grains—like Corn—Wheat—Oats—Kaffir Corn—Milo Maize—Hemp Seed—Sunflower Seed—Hulled Oats—Pin Head Oat Meal—Alfalfa Meal—or Bone Meal—Alfalfa Meal—or Bone Meal—Granulated Bone—Beef Scraps—Charcoal—Oyster Shell—and Grits. We manufacture Eaton's Famous Poultry Foods and handle in addition the various items set out above—also a full line of Mill Feeds—Horse and Dairy Feeds. When asking for quotations, kindly confine your inquiry to such items as you require for immediate shipment. We respectfully solicit a share of your business.

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This Burrell
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keeps the
milk of the 2
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man can opeerate two machines. With
them he can
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cows perhour
according to
conditions. That's about
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milkers will
do. But the

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has a still further advantage. It keeps dust and dirt out of the milk. It raises the standard of milk produced in ordinary stables.

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WANTED:--A reliable young man as working manager on hay farm near Old Chatham, New York. One brought up on a farm, with some Cornell experience, preferred. State wages expected, or would agree to a percentage basis.

Address Box ——
Cornell Countryman
Ithaca, N. Y.

Former Student Notes

(Continued from page 688)

- '12, B. S.—Stanley H. White received his master's degree in landscape art at Harvard and is at present working with Mr. H. Steele at Boston. His address is 88 Broad Street.
- '12, Ex.—Douglass G. Woolf has a position as research chemist with a firm in Wilmington, Delaware. His address is 1025 Trenton Place.
- '13, B. S.—Edgar V. Beebe was married on August 18, 1915, to Miss Ruth M. Edmunds, of North Tonawanda, where he is now teaching.
- '13, W. C.—Mrs. Julia R. Burden is engaged in dairy farming at Cazenovia. The necessary feed is grown in addition to twelve acres of peas which are sold to canneries.
- '13, B. S.—J. S. Champion, assistant in Farm Management in 1913 is now teaching Agriculture in Honesdale, Pennsylvania.
- '13, B. S.—J. H. Cogswell is now with the Department of City Parks in Rochester. His address is 192 Linden Street.
- '13, B. S.—William B. Connor has changed his address from Good Ground, Long Island, to Attica, where he has charge of the Monticello Farm.
- '13, B. S.—Geo. W. Hendry is occupying the position as instructor in Agronomy at the University of California.
- Ex. '13—G. S. Rose is now in the employ of the Sharples Separator Company at West Chester, Pennsylvania.
- '14, W. P. C.—J. G. Beswick is managing the poultry farm of the Clifton Springs Sanitarium. The flocks are largely single comb White Leghorns, together with Pekin and Indian Runner ducks which are fed according to the Cornell formulas.

(Continued on page 708)

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SPRING SCHEDULE

C. U. ATHLETIC ASSOCIATION

MAY

Baseball-Rochester, 3:30 p. m.

Lacrosse—Stevens
Tennis—Princeton
Track—Harvard Dual Meet, 2:00

p. m.
Track—Interscholastic, 3:30 p. m
Freshman Baseball—Tome School
Tennis—Colgate
Baseball—Vermont, 3:30 p. m.

13 Freshman Baseball—Lafayette, 3:30 p. m. Lacrosse—Hobart

Lacrosse—Hobart

7 Baseball—Michigan, 3:30 p. m.

8 Baseball—Michigan, 3:30 p. m.

Baseball—Yale, 3:30 p. m.

Freshman Track—Pennsylvania,

2:00 p. m.

Concert—Musical Clubs, Lyceum
Theatre 8:15 p. m.

NAVY DAY
Spring Day Circus, 10:00 a. m.
Baseball—Pennsylvania, 1:45 p. m.

Navy—Yale-Princeton VarsityFreshman, 5:00 p. m. Navy—Yale-Princeton V Freshman, 5:00 p. m. Tennis—Dartmouth

JUNE-

JUNE—3 Baseball—Williams, 3:30 p. m.
16 Baseball—Colgate, 3:30 p. m.
19 Masque—"Amazons", Lyceum Theater, 3:15 p. m.
20 Concert—Musical Clubs, Bailey Hall, 3:15 p. m.
21 Baseball—Columbia, 3:30 p. m.

legumes and potatoes.

'14, B. S .- T. D. Crippen is now located at the United States Agricultural Experiment Station at Rampart, Alaska. His work is mainly with small grains.

eral Hospital, Boston, Massachusetts.

Former Student Notes

the Green Witch Tea Room, at Green-

Home Economics in the high school at North Grosvenordale, Connecticut.

'14, B. S .- Edna Becker has started

'14, B. S .- Edna Brush is teaching

'14, B. S .- Grace Chapman is training for dietitian in the Massachusetts Gen-

(Continue d from page 706)

'14, B. S .- William G. Frisbie is teaching vocational agriculture in the high school at Clymer. He is cooperating with the local farm bureau in extension

'14, B. S .- Mary Agnes Keene is teaching domestic science at Ogden, Utah. Her address is 34 Madison Ave.

'14, B. S .- H. C. Knandel is teaching agriculture and poultry husbandry in the high school at Segregansett, Bristol County, Massachusetts.

'14, B. S .-- S. R. Lewis since graduation has been managing the Houghton Farm at Mountainville. He has about fifty acres in fruits and about ten acres started in alfalfa. He has also a herd of purebred Holsteins of the Pontiac strain.

'14, B. S .- Alexander Lurie, who has been instructing in the Department of Floriculture at the University of Maine, has accepted a position in the Shaw Botanical Gardens in St. Louis. In his new position he will have charge of the floricultural instruction work carried on by the Shaw Gardens.

'14, B. S .- Mrs. J. H. Reisner (Bertha Betts), now of Nanking, China, announces the birth of a daughter, February, 1916.

(Continued on page 710)

The Tea Room

FOREST HOME

Tea Room Specialties Luncheons and Dinners

TELEPHONE BELL 4-F.25

SPECIAL CASH PRICE



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Operates by the flow of any stream having a fall of 3 feet or more and a supply of at least 3 gallons a minute. Requires no fuel, labor or costly repairs. Made in all sizes. Installed at small expense and without skiled labor. Will maintain an air-pressure system and deliver irrimany other leading universities and fine estates.

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all the comforts of home with the
added luxuries of an up-to-date hotel.

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European Plan Room without bath, 1 person, \$1.50 up Room with bath, 1 person, \$2.00 up

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Ask for booklet
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Offers room with hot and cold water for \$1.00 per day, which includes free use of public shower haths.

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KOHM & BRUNNE

THE LATEST STYLES AT MODERATE PRICES

TAILORS

222 E. State St.

Former Student Notes

(Continued from Page 708)

'15, B. S.—Homer J. Brooks who was taking graduate work here last term is now with the Rosemary Creamery Company of New York City. He is located for the present at Adams.

'15, B. S.—W. W. Butts who has been with the Merrell-Soule Company of Arcade has recently been transferred to their Syracuse branch.

'15, W. C.—C. C. Calvert is in the farming and insurance business at Sterling. He specializes in early vegetables and small fruits for the Oswego and Syracuse markets.

'15, B. S.—Mable Copley is a teacher of Home-Making at Westford.

'15, B. S.—J. M. Frayer is now bacteriologist and chemist for the Lindenville Creamery at Lindenville, Vermont.

'15, W. P. C.—F. E. Herrington is managing the Binghamton Poultry Producers Association, an organization founded by Professor Benjamin of the poultry department at Cornell.

Book Reviews

(Continued from page 637)

pupils in the practical arts work of schools in rural communities: but it also has practical tions for farmers and others who have to deal in any way with the varied repair and construction problems of farm and village life. The book contains information concerning the care and use of shop tools, the repair and construction of farm implements, devices and buildings of all kinds. As the authors state, the purpose of the book is to provide a series of projects in woodworking, blacksmithing, cement and concrete work and harness mending The exercises as laid out will not only furnish training in practical arts, but will also result in making of many things that are of use on the farm.

East Hill Coal Yard

The celebrated Lehigh Valley Coal, Cannel Coal and Wood

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Everything for the Table

Groceries, Meat, Fish and Baked Goods

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Norton Printing Company

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307 E. State Street

Red and White Cafeteria

All new men should know that we serve choice food at reasonable prices.

Pleasant surrounding.

Fine quality.

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"Service that Serves"

Autos for hire

Supplies, Etc.

A Report of Home Demonstration Schools Held Between September 30, '15 and April 1, '16

_	
Number of schools held	26
Number of counties in which	
schools held	17
Average number of instructors	1
Total number enrolled	882
Average number enrolled for	
each school	33.9
Average percentage of enrolled	
members present	81.1
Total attendance (including	
school children)	1112
Average total attendance	42
Number of schools scheduled be-	
tween April and June	9

The figures given above are taken from a report of the Home Demonstration School held so far during the season of 1915-16. While the farm demonstration schools closed about the middle of March, it will be noted that the "open season" for home demonstration schools is practically co-extensive with the college year.

On the whole, the percentage attendance for the women's schools is higher than that for the men's schools. This may be due to the fact that only onesession schools have been held this season. While a two-session homemakers' school would probably be more acceptable for the woman from the country whose husband is attending an all-day school in agriculture, it is easier for the village housekeeper, who must provide a warm dinner at noon for husband and children, to attend a one-session school.

The great difference in enrollment between the largest and the smallest school deserves consideration. Experience with both men's and women's schools has shown that the size of the school depends more upon the experience and ability of the person who is in charge of working it up than upon any other single factor. A chairman who

(Continued on page 715)



The "Short Line Limited" between Auburn and Ithaca

New York State College of Agriculture at Cornell University

The Department of Animal Husbandry

BREEDS-Percheron Horses, Holstein, Jersey. Guernsey, Ayrshire, Short Horn Cattle, Dorset, Shropshire, Rambouillet Sheep, Cheshire Swine

Regular Public Sale of all Surplus Young Stock, Friday of Farmer's Week each year

No Stock Except SWINE Sold at rivate S &le

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A Report of Home Demonstration Schools Held Between September 30, 1915, and April 1, 1916

(Continued from page 713)

commands the confidence of the community, who lives in a central position, who makes herself familiar with the character of the work of the coming school, who systematically districts the entire community, including both the village and the outlying farms; who chooses a large and representative committee, and intelligently directs its activities; above all, a person who understands the value of personal interviews over the telephone or at the front gate; such a chairman will secure a satisfactory membership, even in a small and apathetic neighborhood, while a less experienced person may fail in a larger and far more fertile field.

The schools for home-makers are planned for all the home-makers of the rural districts, whether they live on a farm or in the village. For this reason the constituency of the home-makers' school is far larger in the average neighborhood than is the constituency of the farm school. This must be kept in mind in working up a membership.

With the single worker in the Home Economics Department staff available for extension school service, it has been possible this year to meet only about one-half the requests for home-makers' schools. They are hoping that next year they shall be able to expand their force so that it may be more nearly commensurate with the magnitude and the fertility of their field.

WANTED

The following back numbers of the Cornell Countryman: October and November, 1903; April, 1906; October, 1909. A reasonable price will be paid for them."

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The Clinton House

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So he ordered a barn done in Louis Fourteenth, With hospital, rest room and fixtures. But his urbanized cows promptly went on a strike Until he installed moving pictures!

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-A. B. Genung, '13

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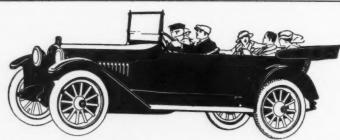
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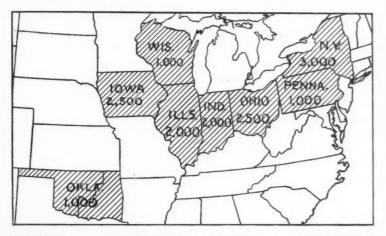
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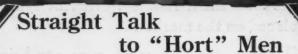
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